

**ABSTRACT**

A highly agile low phase noise frequency synthesizer is provided for rapid generation of frequency specific signals. The frequency synthesizer is capable of rapidly generating signals at different output frequencies while maintaining low cross-coupling.

- 5 Two or more signal generators utilize a reference frequency to generate two or more signals. These signals are limit processed to reduce cross-coupling prior to being presented to a switch. Responsive to a control signal, the switch outputs one of the signals to a frequency modification device, such as a frequency divider or multiplier. Responsive to a control signal, the frequency modification device scales the frequency of
- 10 the switch output to convert the frequency of the switch output signal to a desired output frequency. By maintaining sufficient frequency separation between the switch input signals cross-coupling and phase noise is minimized and implementation on an integrated circuit may be achieved.